

# Milestone Review Flysheet

FRR

**Institution Name** University of South Florida

**Milestone** FRR

Vehicle Properties	
Diameter (in)	6
Length (in)	145
Loaded Weight (lb)	47.5
Launch Lug/button Size	1515
Motor Retention	Front end of motor

Motor Properties	
Motor Manufacturer	Cesaroni
Motor Designation	L1115
Max/Average Thrust	1713N / 1119 N
Total Impulse	5015 Ns
Mass pre/post Burn (g)	4404 / 2010

Stability Analysis	
Center of Pressure (in from nose)	109
Center of Gravity (in from nose)	90.86
Static Stability Margin	3.04
Thrust-to-Weight Ratio	5.29
Rail Size (in) / Length (in)	1515 / 96

Ascent Analysis	
Rail Exit Velocity (ft/s)	58.3
Max Velocity (ft/s)	613
Max Mach Number	0.55
Max Acceleration (ft/s <sup>2</sup> )	229
Peak Altitude (ft)	5731

Recovery System Properties				
Drogue Parachute				
Manufacturer/Model		Recon Recovery		
Size		30 in		
Altitude at Deployment (ft)		Apogee		
Velocity at Deployment (ft/s)		0		
Terminal Velocity (ft/s)		68		
Recovery Harness Material		Kevlar		
Harness Size/Thickness (in)		1/2		
Recovery Harness Length (in)		360		
Harness/Airframe Interfaces		Forged ¼-inch eye-bolt and quick link connected to a swivel and quicklink		
Kinetic Energy During Descent (ft-lb)	Section 1	Section 2	Section 3	Section 4

Recovery System Properties				
Main Parachute				
Manufacturer/Model		SkyAngle		
Size		X-large		
Altitude at Deployment (ft)		1000		
Velocity at Deployment (ft/s)		111		
Recovery Harness Material		Kevlar		
Harness Size/Thickness (in)		1/2		
Recovery Harness Length (in)		360		
Harness/Airframe Interfaces		Forged ¼-inch eye-bolt and quick link connected to a swivel and quicklink		
Kinetic Energy Upon Landing (ft-lb)	Section 1 (Nosecone)	Section 2 (Lander)	Section 3 (Altimeter)	Section 4 (Booster)
	5.98	32.89	11.96	28.90

Recovery System Properties				
Electronics/Ejection				
Altimeter(s) Make/Model		Missile Works RRC3 Altimeter		
Redundancy Plan		The recovery system electrical circuits shall be completely independent of any payload electrical circuits. The recovery system shall contain redundant altimeters.		
Pad Stay Time (Launch Configuration)		2 Hours		

Recovery System Properties	
Electronics/Ejection	
Rocket Locators (Make, Model)	
Transmitting Frequencies	N/A
Black Power Mass Drogue Parachute (gram)	N/A
Black Power Mass Main Parachute (gram)	N/A

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<b>Payload/Science</b>	
Succinct Overview of Payload/Science Experiment	The altimeter bay of the launch vehicle will deploy a landing module with two main systems: Vision and Landing Gear. The camera will recognize the proper target pad. The landing gear system will allow for a stable, vertical landing of the lander section.
Identify Major Components	Vision system with camera and visual processing, landing gear system with spring hinges.
Mass of Payload/Science	7.98 pounds

<b>Test Plan Schedule/Status</b>	
Ejection Charge Test(s)	Successful at sub-scale and full-scale
Sub-scale Test Flights	Successful test launch on December 17
Full-scale Test Flights	Successful test launch on February 18

**Additional Comments**